

Medtronic 

Medtronic Inc.
Attn: The Director, Patent Liaison
Pacing Business Unit
7000 Central Avenue N.E.
Minneapolis, MN 55432-3576

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IDEA SUBMITTAL AGREEMENT
Extension of the P-8131

Gentlemen,

Please receive and evaluate my disclosure (attached) of an Idea ("Idea" includes Ideas, confidential information, patent applications and completed inventions) for:

Myocardial Infarction Detection Utilizing Coronary Sinus Flow Measurement

under the following conditions:

INVENTORSHIP

I am the originator or am rightfully representing the originator of this Idea, am of legal age and have the right to disclose this Idea to the Medtronic Inc.

PURPOSE

I am disclosing my Idea to allow Medtronic to evaluate my Idea as they deem appropriate and determine their interest in negotiating for any rights therein. I understand my Idea may be disclosed to those employees or consultants of Medtronic obligated to treat this information in confidence.

CONFIDENTIALITY

Medtronic considers itself to be a member of the general public for the purpose of receiving the disclosure of the Idea. For a period of time ending twelve (12) months from the date this Agreement is signed, Medtronic will exercise the same degree of care to maintain in confidence the Idea as they exercise to protect their own confidential information. Medtronic will not,

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however, be obligated under this Agreement with respect to any Idea or part thereof which:

- a. is publicly available as of the date Medtronic receives your disclosure or becomes publicly available through no fault of Medtronic;
- b. is released or published by me in writing (e.g. by publication of articles or patent applications);
- c. is obtained from third parties who did not directly or indirectly receive the information from me;
- d. is previously known to or is subsequently developed by Medtronic independently of my disclosure; or
- e. is inadvertently disclosed by a Medtronic employee who has no direct or indirect knowledge of my disclosure under this Agreement.

PERIOD

After the twelve (12) month period ends, Medtronic shall not have any express or implied obligation to me or liability for their disclosure, use or non-use of this Idea, and any related or unrelated Ideas I disclose to them in the course of its evaluation, whether use commences before or after the twelve (12) month period ends except as may arise independently of this Agreement, under valid patents I may obtain on inventions contained in the disclosed Idea.

LAWs

This Agreement shall be governed by the laws of The Netherlands and there are no additional understandings, agreements or representations expressed or implied which are not specified herein.

Yours sincerely,

Barbiola James P. July 6th, 1938.
(Signature) (Date)

Božidar Ferek-Petrić
Sovince 17
10000 Zagreb
Croatia

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PROBLEM:

The most common dangerous development of the ischemic heart disease is the myocardial infarction. It usually develops suddenly due to the occlusion of the coronary artery by a thrombus and only emergency treatment can save the patient. The first interventional method of treatment is delivery of the thrombolytic drug dissolving the thrombus. The next choice is the percutaneous coronary angioplasty by means of the balloon catheter. Finally, surgical treatment by the aorto-coronary bypass is the final solution. Nevertheless, the prompt diagnosis and the fast therapy start are the most important for survival of the patient, whereby the minutes measured time may be critical. Accordingly, some means for fast detection of impending myocardial infarction would be very important.

SOLUTION:

An implantable device comprising an ECG analysis means as well as a coronary flow measurement means capable to recognize the impending myocardial infarction can either give an alarm to the patient or even to deliver the proper drugs therapy. An implantable device comprises a sensor measuring the blood flow velocity either in cardiac vein or coronary sinus. A computer within the implantable device calculates the integral of the blood flow waveform being proportional to the blood flow volume and stores the data developing the long-term trend diagram of the blood flow volume in the memory. Physician may evaluate the ischemic heart disease progression by means of interrogating the device by a programmer and displaying the blood flow trend. It is known from cardiac physiology that coronary arteries deliver the oxygenated blood to the cardiac muscle and that the venous blood exits the cardiac muscle through the coronary sinus. Eventual disturbance of the blood flow through the coronary sinus will be the consequence of the circulatory problem within the certain coronary artery i.e. any occlusion of the coronary artery will decrease the blood volume flowing into the cardiac muscle and consequently decrease the blood volume flowing out of the cardiac muscle. Accordingly, decrease of the blood flow volume will occur in the major acute myocardial infarction. The myocardial infarction causes also the S-T elevation within the ECG waveform. The computer of the implantable device continuously monitors the S-T segment of the ECG waveform and also collects the data for the S-T segment trend developing the long-term trend diagram of the S-T segment. Physician may evaluate the long-term S-T segment variations by means of interrogating the device by a programmer and displaying the S-T trend diagram. If suddenly either of trend curves, blood flow or S-T, shows its derivation increase

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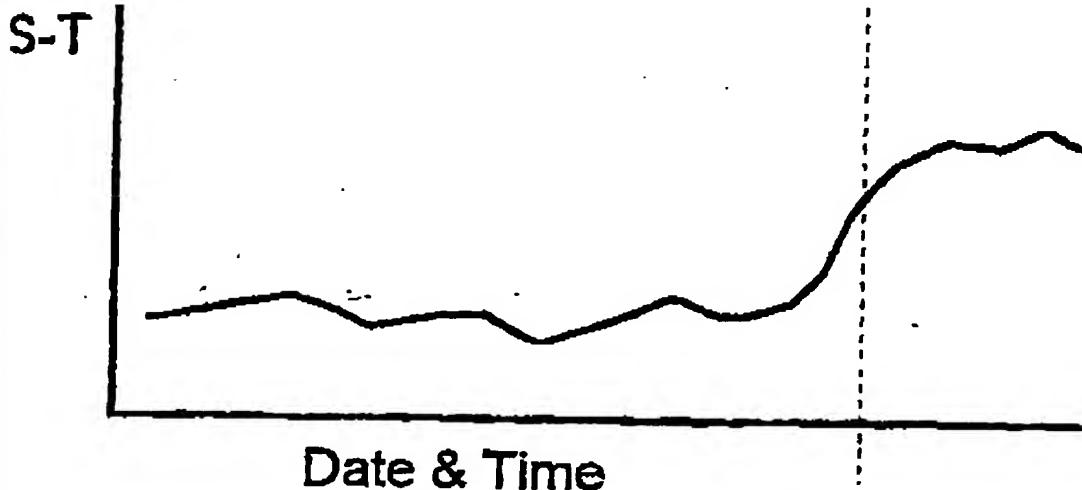
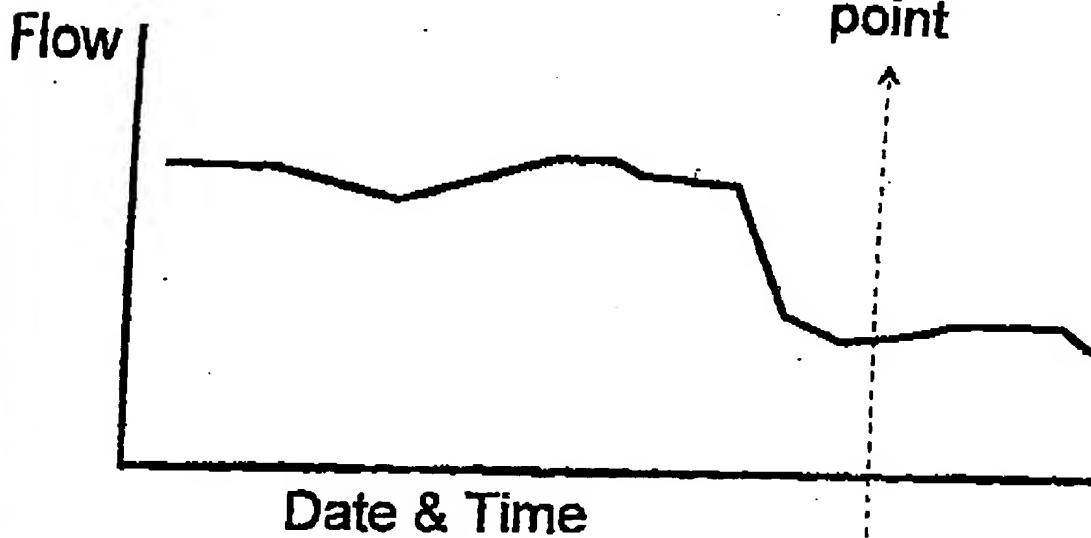
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evaluate if positive or negative derivation occurred in both or in
only one trend curve. If the negative derivation increase occurs in blood flow trend
curve together with the positive derivation increase in S-T segment trend curve, that
means that a myocardial infarction develops. Accordingly, implantable device will
give an alarm to the patient. It may be an audible alarm or some muscle stimulating
alarm as it was described in prior art. Implantable device may also have a drug
delivery pump and a catheter, and it may start the thrombolytic therapy as well as a
prophylactic antiarrhythmic therapy.

MI detection point



MEDTRONIC CONFIDENTIAL

TITLE Myocardial Infarction
 Defibrillizing Coronary
 Sinus Flow Measurement

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FILE NO.

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ATTORNEY

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ACCOUNT CODE

RELATED CASES

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PATENT NO. _____	ISSUE DATE _____	EXPIRE DATE _____	SERIAL NO. _____	FILED _____	PRIORITY _____	ASSIGNMENT _____	ASSIGNEE _____	DATE _____	REEL _____	FRAME _____	LICENSE _____	FILE NO. _____
1. <i>Sechrist-Petric, Bozidar</i>	2. _____	3. _____	4. _____	5. _____	6. _____	7. _____	8. _____					

ASSOCIATE

NAME _____
 FILE NO. _____
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